

CRS Report for Congress

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Navy CVN-21 Aircraft Carrier Program: Background and Issues for Congress

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Summary

Current Administration plans call for procuring the Navy's next aircraft carrier, called CVN-21, in FY2007. The Navy in early 2004 estimated that CVN-21 would cost a total of about \$3.1 billion develop and \$8.6 billion to procure, for a total acquisition cost of about \$11.7 billion. Advance procurement "down payments" on this ship have been approved by Congress each year since FY2001.

On August 19, 2004, the Department of Defense (DOD) reported that the estimated development cost for a 3-ship carrier program (CVN-21 plus two sister ships to be procured years after CVN-21) had increased by \$728 million, to \$4.33 billion. DOD now estimates that the program would have a total acquisition cost of about \$36.1 billion (\$4.33 billion for development and \$31.75 billion for procurement), or an average of about \$12 billion per ship. If much of the \$728-million increase in the estimated development cost is for the CVN-21 itself, then CVN-21's estimated acquisition cost may now be more than \$12 billion.

In mid-August 2004, it was reported that the Navy's draft FY2006-FY2011 shipbuilding plan would delay procurement of CVN-21 by one year, to FY2008. Based on past data for carrier construction programs, such a delay might increase the procurement cost of the ship by a few or several hundred million dollars, which could increase its total acquisition cost to well over \$12 billion, and possibly something closer to \$13 billion. This report will be updated as events warrant.

Background

The Navy's Current Carrier Force. DOD plans currently call for maintaining a Navy with 12 aircraft carriers. The current carrier force includes 2 conventionally powered carriers (the Kitty Hawk [CV-63], and the John F. Kennedy [CV-67]) and 10 nuclear-powered carriers (the one-of-a-kind Enterprise [CVN-65]) and 9 Nimitz-class ships [CVN-68 through -76]. The most recently commissioned carrier, the Ronald Reagan (CVN-76), was procured in FY1995 at a cost of \$4.45 billion and entered service in July 2003 as the replacement for the Constellation (CV-64). The next carrier, the

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George H. W. Bush (CVN-77), was procured in FY2001 at a cost of \$4.97 billion and is scheduled to enter service in 2008 as the replacement for the Kitty Hawk.

The Aircraft Carrier Construction Industrial Base. All U.S. aircraft carriers procured since FY1958 have been built by Northrop Grumman's Newport News Shipbuilding (NGNN) of Newport News, VA — the only U.S. shipyard that can build large-deck, nuclear-powered aircraft carriers. The aircraft carrier construction industrial base also includes hundreds of subcontractors and suppliers in dozens of states.

Navy Aircraft Carrier Acquisition Programs. Navy aircraft carrier acquisition efforts currently revolve around CVN-77 and the CVN-21 program. Each of these is discussed below.

CVN-77. Congress approved \$4,053.7 million in FY2001 procurement funding to complete CVN-77's total procurement cost of \$4,974.9 million. The ship, which was named in honor of former president George H. W. Bush on December 9, 2002, was originally to include new-design radars and a new-design combat system known as the Integrated Warfare System (IWS) to be made by an industry team led by Lockheed Martin. During 2002, however, the Navy backed away from this plan and announced that the ship would instead be equipped with older-design radars and a combat system similar to those used by previous Nimitz-class carriers. The conference report (H.Rept. 107-732 of October 9, 2002) on the FY2003 defense appropriations bill (H.R. 5010/P.L. 107-248) provided an additional \$90 million for CVN-77 for IWS and contained language directing the Navy to build the ship with an advanced combat system (page 185).

CVN-21 Program. In August 2004, DOD began describing the CVN-21 program as a 3-ship program encompassing CVN-21 and two sister ships to be procured years after CVN-21. (CVN-21 simply means aircraft carrier for the 21st Century.) On August 19, 2004, the Department of Defense (DOD) reported that the estimated development cost for the 3-ship program had increased by \$728 million, to \$4.33 billion. DOD now estimates that the 3-ship program would have a total acquisition cost of about \$36.1 billion (\$4.33 billion for development and \$31.75 billion for procurement), or an average of about \$12 billion per ship.

CVN-21 (also called CVN-78). The Navy wants to procure CVN-21 (also known as CVN-78) in FY2007 and commission it into service in 2014 as the replacement for the Enterprise (CVN-65), which would then be 53 years old. The Navy in early 2004 estimated that CVN-21 would cost about \$3.1 billion to develop and \$8.6 billion to procure, for a total acquisition cost of about \$11.7 billion. The \$3.1 billion in estimated development costs for the CVN-21 represented most of the previously reported estimated development cost for the 3-ship program. In light of this, much of the \$728-million increase in the total development cost for the 3-ship program might be due to an increase in the estimated development cost for CVN-21 itself. If so, then CVN-21's estimated acquisition cost may now be more than \$12 billion.

In mid-August 2004, it was reported that the Navy's draft FY2006-FY2011 shipbuilding plan would delay procurement of CVN-21 by one year, to FY2008. Based on past data for carrier construction programs, such a delay might increase the procurement cost of the ship by a few or several hundred million dollars, which could

increase its total acquisition cost to well over \$12 billion, and possibly something closer to \$13 billion.

Through FY2004, Congress approved \$1,729.7 million in advanced procurement funding and \$1,142.3 million in development funding for CVN-21. The Administration's proposed FY2005 defense budget requested \$626.1 million in procurement funding and \$327.3 million in development funding for the ship.

The Navy originally wanted the carrier after CVN-77 to be a completely new-design aircraft carrier (hence its initial name of CVNX-1, rather than CVN-78). In May 1998, however, the Navy announced that it could not afford to develop an all-new design for the ship and would instead continue to modify the Nimitz-class design with each new carrier that is procured. Under this strategy, CVN-77 and CVNX-1 were to be, technologically, the first and second ships in an evolutionary series of carrier designs.

Compared to the baseline Nimitz-class design, CVNX-1 was to require 300 to 500 fewer sailors to operate and would feature an entirely new and less expensive nuclear reactor plant, a new electrical distribution system, and an electromagnetic (as opposed to steam-powered) aircraft catapult system. In large part because of the reduction in crew size, CVNX-1 was projected to have a lower life-cycle operation and support (O&S) cost than the baseline Nimitz-class design. CVNX-1 was to cost \$2.54 billion to develop and \$7.48 billion to procure, giving it a total acquisition cost of \$10.02 billion.

In May 2002, Secretary of Defense Donald Rumsfeld directed DOD offices to reexamine the need for 5 major defense acquisition programs, including CVNX-1. In response, the Office of the Secretary of Defense (OSD) began studying several alternatives to the Navy's carrier acquisition plan, including procuring smaller conventional carriers instead of large nuclear-powered carriers; procuring a repeat version of CVN-77 in FY2007 instead of CVNX-1; and skipping procurement of CVNX-1.

In November and December 2002, after reviewing these alternatives, OSD decided to alter the design of CVNX-1 to incorporate additional advanced features originally intended for CVNX-2 (the name at the time for the next carrier after CVNX-1). These changes included a new and enlarged flight deck, an increased allowance for future technologies (including electric weapons), and additional manpower reductions. Compared to the baseline Nimitz-class design, the ship would now require at least 500 fewer sailors to operate. To signify these changes, the ship's name was changed from CVNX-1 to CVN-21. Incorporating the changes increased the ship's development cost by about \$600 million and its procurement cost by about \$700 million. OSD reportedly did not consider CVNX-1 sufficiently transformational; the CVN-21 proposal appears intended to increase the transformational content of the ship.¹

The Navy in the latter months of 2002 proposed to fund the procurement of CVNX-1/CVN-21 starting in FY2004 through the Navy's research and development account rather than the Navy's ship-procurement account, known formally as the Shipbuilding and Conversion, Navy (SCN) account. In December 2002, however, it was reported that the

¹ For more on naval transformation, see CRS Report RS20851, *Naval Transformation, Background and Issues for Congress*, by Ronald O'Rourke.

Office of Management and Budget (OMB) objected to this proposal. As a result, the Pentagon is proposing to fund the procurement of CVN-21 through the SCN account.²

CVN-79. Navy plans have called for procuring CVN-79 (previously called the CVN-21 Follow-On and, before that, CVNX-2) in FY2011 and commission it into service in 2018 as the replacement for the John F. Kennedy, which will then be 50 years old. Initial advance procurement funding for CVN-79 is currently programmed for FY2007. If, however, procurement of CVN-21 is delayed a year, to FY2008, then it is possible that procurement of CVN-79 could also be delayed by a year, to FY2012, which could delay initial advance procurement funding a year, to FY2008. Compared to CVN-21, CVN-79 would feature a more significantly redesigned flight deck, an electromagnetic arresting gear, and possibly hull-design improvements, including reactive armor protection.

CVN-80. This is the third ship in the 3-ship CVN-21 program. It nominally would be procured a few years after procurement of CVN-79.

Table 1 on the next page shows procurement and development funding for CVN-21 and CVN-79 through FY2009.

Potential Issues for Congress

Affordability, Cost Effectiveness, and Potential Alternatives. With an estimated average acquisition cost of about \$12 billion per ship, would the 3 carriers in the CVN-21 program be affordable and cost effective? Supporters could argue that in spite of their cost, carriers are flexible platforms that in recent years have proven themselves highly valuable in various U.S. military operations, particularly where U.S. access to overseas bases has been absent or constrained. Carriers, they could argue, have been useful not only for operating strike fighters and other tactical aircraft, but also for embarking Army forces (as during the 1994 Haiti crisis) and special operations forces (as in the 2001-2002 war in Afghanistan). Supporters could also argue that Congress is already heavily committed to procuring CVN-21, having approved more than \$3.8 billion of the ship's total acquisition cost from FY2001 to FY2005.

² The Navy reportedly wanted to start funding the procurement of CVNX-1/CVN-21 through the Navy's research and development account in part because the new technologies to be incorporated into CVNX-1/CVN-21 give it somewhat the character of a research and development activity as opposed to a straight procurement action. The Navy reportedly believed that funding procurement of the ship through the research and development account would permit the Navy to better manage the technical and cost risks involved in developing and building the ship. Items acquired through research and development accounts are not subject to the full funding policy as traditionally applied to DOD weapon procurement programs. If procured through the research and development account, the Navy would be able, for example, to fund the procurement of CVN-21 using a stream of annual funding increments — a funding strategy that, when used in funding items procured through DOD procurement accounts, is called incremental funding. Such a strategy would reduce the financial strain that procurement of CVN-21 would place on the Navy budget in any single year. Congress, however, imposed the full funding policy on DOD in the 1950s in part to end the use of incremental funding in defense procurement, because it was viewed as having disadvantages in terms of reducing DOD budgeting discipline and making the total costs of weapons less visible. For a discussion, see CRS Report RL31404, *Defense Procurement: Full Funding Policy — Background, Issues, and Options for Congress*, by Ronald O'Rourke and Stephen Daggett.

**Table 1. Procurement and Development Funding for
CVN-21 and CVN-79, FY2001-FY2009**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	Total thru 2009
Procurement (Shipbuilding and Conversion, Navy [SCN] account)										
21	21.7	135.3	395.5	1177.2	626.1	611.9	2806.8	2830.1	0	8604.6
79	0	0	0	0	0	0	162.1	420.8	1568.6	2151.5*
Development (Navy research and development account)										
21	230.5	276.5	318.5	316.8	327.3	298.7	232.9	210.1	152.5	2363.8*
79	0	5.0	0	0	0	0	0	191.6	315.8	512.4*

Source: Data provided to CRS by Navy Office of Legislative Affairs, February 17, 2004.

* Additional funding to be provided in FY2009 and future years.

21= CVN-21; 79 = CVN-79

Skeptics, while acknowledging the operational value of large carriers, could question whether, in light of their cost, there might be more cost effective alternatives. Potential alternatives include, among other things, smaller carriers about the size of today's Wasp (LHD-1) class amphibious assault ships, which might cost roughly \$3 billion to procure; UAV/UCAV carriers (which would be designed to embark air wings composed mostly of unmanned air vehicles [UAVs] and unmanned combat air vehicles [UCAVs]); and very small carriers, such as high-speed ships large enough to embark roughly half a dozen manned tactical aircraft each. Skeptics could argue that, even though substantial funds have already been appropriated for CVN-21, not all of these funds have been expended, and that, if large carriers are not cost effective compared to alternatives, Congress should not "throw good money after bad" by continuing to fund CVN-21.

Funding Profile and Full Funding Policy. The Navy in its current budget has divided the final portion of CVN-21's procurement cost between FY2007 and FY2008. The Navy apparently adopted this approach, which is called split funding, in part to reduce financial strain on the FY2007 budget. Split funding is a departure from the full funding policy — a defense budgeting rule that requires the full procurement cost of any item procured through the procurement title of the defense appropriations act to be provided in the year in which the item is procured.³ Potential questions to consider include Should CVN-21 be procured with split funding? Would this set a precedent for using split funding to procure other DOD weapons? What effect would split funding or a large amount of advance procurement funding for CVN-21 have on adherence to the full funding policy? What would be the impact on the procurement schedules and costs of other Navy procurement programs if split funding were not used?

³ For a discussion of these issues, see CRS Report RL31404, op cit.

Legislative Activity For FY2005

FY2005 Defense Authorization Bill (H.R. 4200/S. 2400). The House Armed Services Committee, in its report (H.Rept 108-491 of May 14, 2004), on H.R. 4200, recommended approval of the FY2005 funding R&D and procurement funding requests for the CVN-21 program. The committee also recommended a \$10-million increase in program element (PE) 0603512N (Carrier Systems Development) within the Navy's research and development account for the Aviation Ship Integration Center. (Page 171; see also page 158.)

The Senate Armed Services Committee, in its report (S.Rept. 108-260 of May 11, 2004) on S. 2400, recommended approval of the FY2005 funding R&D and procurement funding requests for the CVN-21 program. The committee also recommended a \$9-million increase in PE 0603512N (Carrier Systems Development) within the Navy's research and development account for the Aviation Ship Integration Center. (Page 185; see also page 169.) The report also recommended a \$15-million increase in the Navy's shipbuilding account for the power unit assembly facility (PUAF). (Page 82.)

FY2005 Defense Appropriations Bill (H.R. 4613/S. 2559). The House Appropriations Committee, in its report (H.Rept. 108-553 of June 18, 2004) on H.R. 4613, recommended approval of the FY2005 R&D and procurement funding requests for the CVN-21 program. The committee also recommended a \$7.5-million increase in PE 0603512N (Carrier Systems Development) within the Navy's research and development account for the Sentinel Net anti-terrorism and force-protection system (\$1.5 million), surface ship composite moisture separators (\$4 million, to be used only for design, development, testing, and manufacture of composite radar absorbing moisture separators), and the Aviation Ship Integration Center (\$2 million). (Page 273). The committee also recommended \$2 million to begin a program to replace eroded propellers on existing carriers with new-design propellers rather than refurbished propellers of the existing design. (Page 172).

The Senate Appropriations Committee, in its report (S.Rept. 108-284 of June 24, 2004) on S. 2559, recommended a \$140.9-million reduction in the FY2005 procurement funding request for CVN-21 on the grounds that this portion of the request was premature (page 83; see also page 82). The committee also recommended a \$5-million increase in PE 0603512N (Carrier Systems Development) within the Navy's research and development account for the Aviation Ship Integration Center. (Page 153; see also page 148.)

The conference report (H.Rept. 108-622) on H.R. 4613 recommended approval of the FY2005 procurement funding request for the CVN-21 program. (Page 185). The report also recommended a \$7.2-million increase in PE 0603512N (Carrier Systems Development) within the Navy's research and development account for the Sentinel Net anti-terrorism and force-protection system (\$1.1 million), surface ship composite moisture separators (\$2.4 million, to be used only for design, development, testing, and manufacture of composite radar absorbing moisture separators), and the Aviation Ship Integration Center (\$3.7 million). (Page 295; see also page 276.)